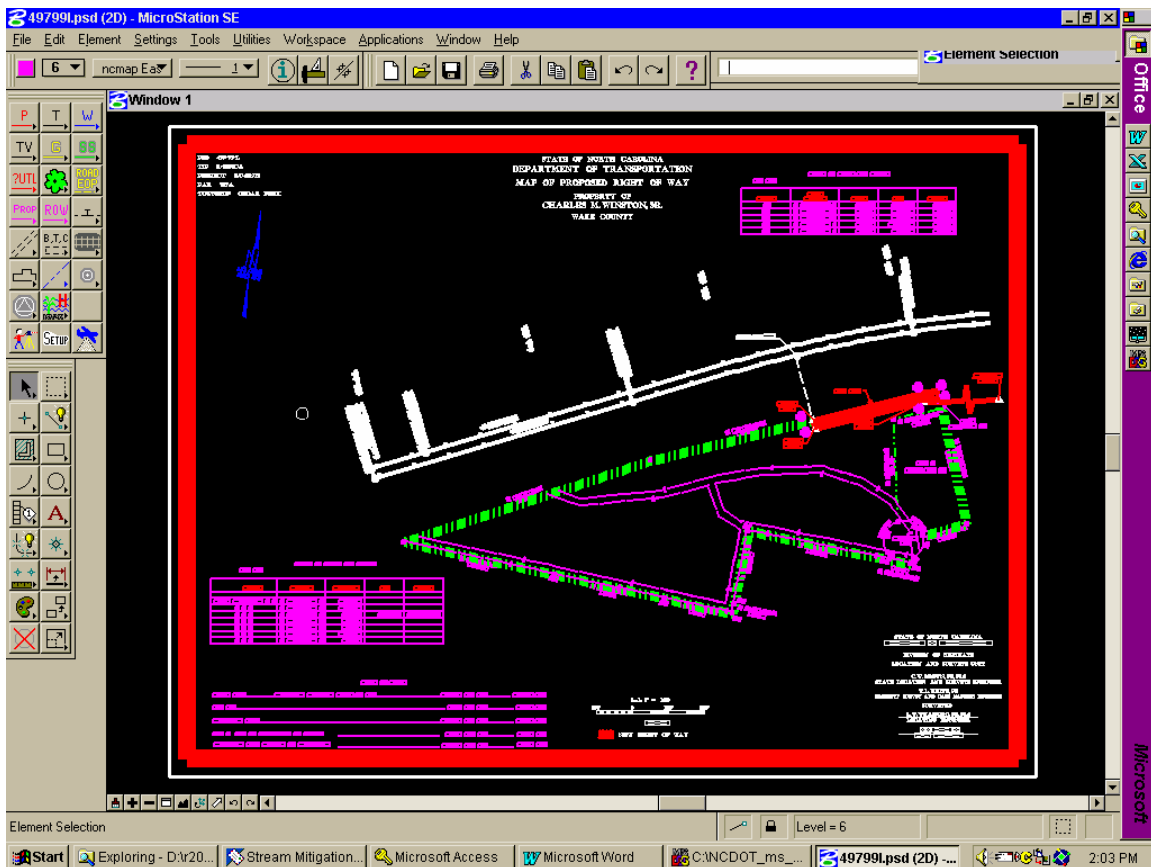


NCDOT LOCATION AND SURVEYS UNIT PROPERTY SURVEY MANUAL



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Property Surveys

Property surveys, in the context used in this manual are maps prepared to accurately illustrate the boundaries of property affected by North Carolina Department of Transportation projects and the areas of right of way, easements and mitigation sites to be acquired by NCDOT from these properties. These surveys may be prepared by the Location and surveys Unit or by private Engineering firms under contract to the Location and Surveys Unit. These surveys serve several purposes.

Most importantly, they serve to satisfy NCDOT's obligation to prepare a map of property to be acquired by condemnation as described in N. C. General Statute 136-106. This statute states that: "The Department of Transportation, within 90 days from the receipt of the answer shall file in the cause a plat of the land taken and such additional area as may be necessary to properly determine the damages, and a copy thereof shall be mailed to the parties or their attorney; provided, however the Department of transportation shall not be required to file a map or plat in less than six months from the date of the filing of the complaint."

Frequently right of way agents and DOT Attorneys use property survey maps in negotiations and mediations. These activities often result in condemnation cases being resolved without resorting to a costly and time consuming court trial.

Usually property not involved in the condemnation process is acquired for right of way using a description written from the project plans by a right of way agent. When a more accurate metes and bounds description and a more accurate area of the taking is needed a property survey is prepared.

Persons assigned to prepare property should be competent land surveyors. They should be familiar with proper surveying and mapping procedures and practices according to the guidelines set forth in this manual and the Standards of Practice as published by the North Carolina Board of Examiners for Professional Engineers and Professional Land Surveyors. Property Surveys prepared by the NCDOT Location and Surveys Unit are not however; intended to meet all of the requirements of NC General Statute 47-30 as amended.

This manual is provided as a guideline for using information provided by the Attorney General's Office, deed research and information gathered by an actual field survey to produce a quality property survey map.

File For Legal Action (Eleven Months Survey)

This file is received from the Department of Justice, State Highway Division. Its contents consist of four parts as follows:

1. Cover sheet and authorization for survey.
 - a. Date, which is approximately the date on which the Civil Action was filed in the Superior Court of the county in which the property is located. The survey and map are required within eleven months of this date.
 - b. Name or names of defendants.
 - c. Project number.
 - d. County in which Civil Action has been filed.
 - e. Parcel Number
 - f. Name of trial attorney assigned to the case.
 - g. Legal file number.
2. Copies of documents filed in Civil Action in the Superior Court of the county in which the property is located. These papers consist of three parts as follows:
 - a. Complaint, Declaration of Taking, and Notice of Deposit.
 - b. Exhibit "A". Pay particular attention to the easements listed on this sheet under the heading of "Liens and Encumbrances". It is required that an easement of right of way in fee simple be shown on the map of survey.
 - c. Exhibit "B". Pay particular attention to deeds listed on this sheet under the heading of "Description of Property Affected." The deed books and pages listed should be checked against those shown in the preliminary certificate for correctness and completeness.
3. Copies of Preliminary Certificates of Title

The description or descriptions shown in the Preliminary Certificate of Title should be checked in the Public Records of the particular county for errors or omissions. When only the deed book and page of the property or properties, exception or exceptions are given, the deed in its entirety, including signature pages, should be copied and inserted in the file. When a plat is available, a print of it should be obtained and inserted in the file. At times deed descriptions or plats of adjoining property are useful in making the survey and copies should be obtained and inserted in the file.

4. Sketch Map

The sketch map is usually a copy of a portion of a Construction Plan Sheet which shows the proposed right of way of the highway, proposed easements, the owner's name and the parcel number. Hatched lines on the map indicate the area required for proposed right of way. Crosshatched lines indicate areas required for easements. This map is to be used only as a guide by the surveyor. Final Construction Plan sheets should be used for information required to make the survey. Final construction plans may reflect later revisions to the right of way and/or easements. Final construction plan sheets should have a letting date on the cover sheet. Final construction plan sheets are signed and sealed by the Highway Design Engineer and the Hydraulics Engineer. If final construction plans are not available the most recent stage of preliminary plan should be used. The appropriate right of way agent and resident engineer should be consulted to verify all rights of way and easements on the plans used.

Information Available for Use in Making the Survey

A folder, containing the file for legal action, is sent to the field office for survey. Along with it may go special instructions pertaining to the survey. A Property Survey Division (PSD) job number is assigned to each file, and all of the above papers are bound into the right side of the folder. Property Survey Division checklists are bound into the left side of the folder. One checklist is placed in the folder for the aid of the surveyor. Another checklist is placed in the file for use by the CADD technician. Use of these checklists should help produce a complete survey map for the property involved with no omissions of minor details. All of the contents of the folder should be read and thoroughly understood by the surveyor, particularly the description of the property involved and the declaration of taking. Other information, which may be helpful for use in making the survey, may consist of aerial photographs, property strip maps and deed descriptions, and previous condemnation surveys of the property.

The local Right of Way Agent involved in the particular survey can be an invaluable source of information. The Right of Way Agent should always be contacted before beginning work on the survey. He/she can provide an abstract of the existing right of way. Often Right of Way Agents have up to date knowledge concerning recent plan revisions or upcoming plan revisions. If a condemnation case is settled or is going to be settled often the Right of Way Agent knows before the Attorney General's office. If the Right of Way Agent indicates that a case has been settled be sure to contact the Property Surveys Engineer before continuing your work - preparing the map may not be necessary.

The Resident Engineer's office is another valuable source of information. Slope Stake information may be available from the Resident Engineer. He/she may also be aware of recent or upcoming plan revisions.

The Z Job

When the property owner files an answer to the Civil Action, another cover sheet or authorization is issued to the Location & Surveys Unit by the Legal Department. This is a request for a final map of the survey of the property in question. The date near the bottom of this sheet is the date when the final map is required to be in the hands of the DOT Attorney. This date is usually about forty (40) calendar days after the filing of the answer.

If the survey has not been completed as an eleven month survey, it should be completed as soon as possible after the receipt of the request so that the surveyor's map can be edited and the final map completed within the allowed time limit.

Inverse Suit Survey

An inverse suit is a legal action filed by a property owner against the DOT. The Legal Department furnishes duplicate copies of the papers in the Legal action to Location & Surveys. The date near the bottom of the cover or authorization sheet is the date when the final map is required to be in the hands of the DOT Trial Attorney.

All of these papers should be read and thoroughly understood by the surveyor. The description of the property involved in the suit should be checked with the deed on file in the Public Records of the particular county.

Inverse suits require making a substantially comprehensive title search. In these cases the description of property involved is furnished by the petitioner and may be inaccurate and rarely gives chain of title.

Pay particular attention to the allegations as set out by the property owner. The surveyor should endeavor to show on the map any information that might have a bearing on those allegations.

SAP Survey

Sometimes when a case is being settled by Consent Judgment, a map of the property involved is requested. Information shown on the map is used in preparing the judgment. This survey and map are made in the usual manner as for an eleven month survey. However, since the survey is being used for a settlement of the case, time usually is of the essence; and this survey should be completed as soon as possible. Emphasis should be placed on completeness and correctness of information shown for the R/W Tracts and Easements. Topography on the map is not necessary unless it is specifically requested.

Other Surveys

At various times the Property Survey Division of the Location Department is called upon to make special surveys, such as Residue Surveys, surveys for Advance Acquisition of R/W, surveys of State Property, Borrow Pit surveys, wetland mitigation surveys and stream mitigation surveys among others.

Special instructions regarding the nature and scope of the survey, and the content and format of the mapping usually are issued at the time these surveys are requested.

Courthouse Research

Deed and tax records should be investigated to determine pertinent information regarding the subject property. All of the property described in exhibit "B" in the legal file should be included in the survey. All parcels of land which have been divided from the property described in exhibit "B" and conveyed to others, before the date of taking, should be researched to allow proper delineation and labeling as an exception on the preliminary map. Any other recorded documents affecting the subject property including easements for ingress and egress, utility easements, leases, right of way agreements and recorded maps should be copied and bound to the left side of the property survey folder. If adjoining deeds or plats are used to establish property lines, copies of these adjoining deeds and plats should be included in the file.

Contiguous property belonging to the property owner in question (the defendant in the complaint) as of the date of taking (the date on the cover sheet of the complaint) should be researched. To accomplish this, adjoining property should be researched to determine that it does not belong to the defendant. If the defendant in the complaint owns contiguous property, which is being used in the same way as the subject property, but the complaint land does not cover it may have been inadvertently left out of the complaint. If you believe this has happened you should notify the Property Surveys Engineer immediately. In this case the complaint may have to be amended.

When any discrepancies are found in property ownership as shown in the Legal file, they should be reported to the Property Survey Engineer immediately so that the Legal Department can amend the Exhibit "B" (description of property affected) in the file.

Field Surveys

A. Property Line Ties

All property lines within area of taking are to be tied to the appropriate alignment to the nearest 0.01' in English surveys or nearest millimeter for metric surveys. Locate all existing monumentation and appurtenant evidence necessary to establish property lines and corners involved in the take.

B. Total Area of Property

The complete boundary of the property in question is to be plotted and closed out. This may be done by plotting the deed descriptions if the total boundary is not surveyed. The property lines are to be annotated with deed bearings and distances. On lines that are surveyed, DOT bearings and distances should be shown also. The total area used should be from the most accurate source available (deed, tax map, computed, etc.) and shown in the Table of Areas. An area obtained when a deed is computed and forced to close should be used only as a last resort. Deed, plat or tax record areas are preferred. Total remaining area is to be shown in the Table of Areas. All separate and isolated remaining areas are to be labeled on the map but not broken down in the Table of Areas. Care should be taken to insure that all of the separate and isolated remaining areas shown on the face of the map add up to the remaining area shown in the table.

C. Topography

Show woods, cultivated and open land, roads, streets, trails, buildings and other structures as of the date when the Civil Action was filed (as best as can be determined). This information can be taken from aerial photographs, which usually are available. Show the original location of buildings and other structures, which have been removed during construction. The information for showing these locations may be taken from the field survey, Location topography files or construction plans. Improvements located on remote areas of the subject property far from any areas of take do not need to be located as precisely as those close to or in the areas of take. These Improvements may be scaled from county topo maps or other sources. Utility information such as poles, underground service lines, and other structures not affecting appraisal are not normally shown. The existing width of right of way, maintained right of way, whether paved or not and width of pavement should be shown on all roads.

When a building is located near a R/W line, the exact distance from the appropriate alignment to the closest corner of the building should be shown.

Map of Survey

The map of each survey should conform to the following:

Size of Maps

Property Survey Maps are prepared the following sizes: 16" x 19", 19" x 32", 22" x 36" and 30" x 36". When absolutely necessary, a sheet larger than 30" x 36" is used, although this procedure is not preferred by the Legal Department. Before preparing a map larger than 30' x 36' contact the Property Surveys Unit for approval. Usually maps larger than 30' x 36' can be avoided by the creative use of insets.

Preliminary maps of surveys, prepared by the field offices, should conform to the above sizes.

Scale of Maps

All maps should be drawn to such scale that the survey will conform to the map size as stated above, and that the map can be clearly read and understood. Particular attention should be paid to any congested areas. Enlargements or insets may be used for clarity. Insets do not have to be drawn to scale. In order to choose the proper scale for a map, all of the different areas to be shown on the map (right of way take, easements and remaining area) should be computed and stored as parcels before the map scale is chosen. Once the parcels have been stored they can be visualized in Geopak and title sheets of various sizes at various scales can be tried until the proper sheet size and scale are determined. Usually a smaller scale than "plan sheet scale" (usually 1"=50' or 1:500) should be used. Once the map size and scale are chosen the parcels should be visualized, the tables built and the map plotted to make the final determination if the map size and scale are appropriate. No text or topo should be placed on the map until the decision as to sheet size and map scale has been determined. This is a very important aspect of the mapping process. Extremely large and/or multiple page maps are usually unnecessary.

Accuracy of Map

If possible, error of closure in the deed description should be forced into one line as far as possible from the areas of taking.

R/W Tract

Tie each tract to a station on the appropriate alignment by bearing and distance to the beginning point of the tract. If the sideline of the tract is perpendicular to or close to being perpendicular to the survey line to which it is being tied, tie the tract by extending the sideline to an intersection with the survey line. This should result in the bearing of the tie line being the same as the bearing of the sideline of the tract. Be sure to compute the intersection point in your gpk file. If the sideline is parallel to or close to parallel to the

survey line, tie to the beginning point of the tract with a tie line perpendicular to the survey line.

MDL Application “Tables 342.ma” allows ties to be easily accomplished. To tie by extending the sideline of the tract the intersection point number must be previously computed. Choose reference method “point” and enter the point number in the “point name” box. To tie the tract with a tie line perpendicular to the survey line choose reference method “right angle plus”. The software computes the right angle plus for you. Remember that rules are made to be broken. If the specified tie method makes your map look foolish or confusing use your good surveying judgment and your creativity to produce the best product possible.

Number each tract when more than one is required. “Tables 342.ma” uses the point numbers stored in your gpk file to designate points in the table of metes and bounds. There is no need to change the numbers to letters. Be sure to number the tract corners on your map to match the metes and bounds table. If the point numbers are too large (too many digits) and take up too much space on your map you can use capital letters to designate points on the tract. Do not use letter I or O. Do not repeat letters on the map. When the full alphabet is used up, designate points by double letters AA, BB, CC, etc. When that sequence is completed, combinations AB, AC, AD, etc. should be used, if necessary. Designation of points should run in a clockwise direction. Any questions regarding R/W should be discussed with the Division R/W Agent. Be sure to label each R/W monument on the map with its station and offset from the appropriate survey line.

Drainage Easement

Tie in the same manner as for R/W Tracts. Number each easement. As with right of way tracts “Tables 342.ma” uses point numbers stored in your gpk file to designate points in the table of metes and bounds. There is no need to change the numbers to letters. If letters are more convenient or if you just prefer letters use lower case letters to designate points on the easement. Do not assign a letter or number to a point previously designated as a point on a R/W tract. R/W tract point numbers or letters should be used. Do not use capital letters I or O or lower case i, o or l. Designation of points should run in a clockwise direction. Letters may be repeated on the map, if necessary. A permanent drainage easement takes precedence over any other easement since it is of a permanent nature. Any questions regarding easements should be discussed with the Resident Engineer and/or Division R/W Agent. It is not necessary to label stations and offsets to easement points that do not coincide with a right of way monument.

Slope Easements

Same rules apply as for drainage easement.

Temporary Construction Easement

Same rules apply as for drainage easement.

Temporary Detour

Same rules apply as for drainage easement.

New R/W Table of Metes and Bounds

When more than one R/W Tract is required, corresponding numbers should be used for the tables in the following manner: New R/W # 1, New R/W # 2, etc.

Tables for Drainage Easement, Temporary Construction Easement, Slope Easements, Temporary Detour, Borrow Pit Area and Haul Road should be numbered in the same manner.

Table of Metes and Bounds

A table of metes and bounds for each area of R/W and/or easement taking shall be made. The table should include the bearing and distance of each straight course and the bearing and distance, arc length, radius and direction (right or left) of curved courses. For metric projects, both English and metric distances are to be shown. MDL Application "Tables 342.ma" will create your table for you from a parcel stored in your gpk file. You must remember to store the parcel with the point number of the pc and pt of each curve, in addition to the name of the curve. Parcels should be stored in a clockwise direction.

Table of Areas

The table of areas should be built using MDL Application “Tables 342.ma” and should appear as follows:

TOTAL AREA _____ EXCLUDING EXISTING RIGHT OF WAY _____

NEW R/W _____

REMAINING AREA _____

REMAINING AREAS SUBJECT TO EASEMENTS:

PERMANENT DRAINAGE EASEMENT _____

TEMPORARY DRAINAGE EASEMENT _____

SLOPE EASEMENT _____

TEMPORARY CONSTRUCTION EASEMENT _____

If part of the total area is in the existing right of way, and the total area in the table excludes the existing right of way, the area in the existing right of way should be shown in the lower left corner of the map.

Additional Information Required on Map

In the upper left-hand corner of the map, indicate the Property Survey Division File number, the Legal Department File number and the Parcel number as follows:

PSD #
TIP #
PROJ. #
PAR #
Township

In the title show the property owner’s name, as indicated on the letter from the Attorney General’s Office, which accompanies the complaint, county, and CVS #.

Include PLS & PE #'s of Locating Engineer and Surveyor if licensed.

Be sure that the map is oriented so that the north arrow points up in the upper 180 degrees of the map.

Give the scale of the map and the scale of the insert or enlargement if one is required. Insets do not have to be drawn to scale

On the Project road and intersecting road or roads, provide the US Highway or Secondary Road number and the nearest town in each direction from the property.

On surveys involving a Controlled Access road, be sure that all roads upon, contiguous to or near the property are shown and designated by local name and number. Show distance to nearest access road from project road. When a Service Road is provided for a tract of land, show the distance to the nearest road intersection.

On property lines actually surveyed, label with DOT bearings & distances as well as the deed and/or plat bearing and distance. On property lines within R/W or easement taking, DOT bearings and distances should not be labeled, as they will be shown in the tables. On metric projects, lines should be labeled with English and metric distances.

Describe all property corner monumentation found and used in the survey. If a fence, hedge, ditch, stream or other natural feature is used as a boundary or property line, indicate it on map.

If a property owner points out a property line on the ground, make a note to that effect on the map.

For Controlled Access, indicate C/A on the R/W lines and show any access points by L line or Y line station and the width of the access.

End of Control of Access lines should be indicated on Secondary or other roads where Control ends.

R/W monuments which are included in a table of metes and bounds should have the ncpnop "place R/W new monument on point" symbol. R/W monuments, which are not included in a table of metes and bounds, should have the "place R/W new monument" symbol. R/W monuments should be labeled with a station and offset from the appropriate survey line.

Priority of Jobs Assigned for Survey

Unless otherwise instructed, the following priority should be strictly adhered to in jobs assigned for survey.

1. Revisions. These jobs are usually calendared for trial at an early date or the revisions are required by court order.

2. Surveys required for writing descriptions to be used in settling cases by default or consent judgment. These jobs are marked "SAP" (soon as possible) on transmittal sheet.

3. Z Jobs. These jobs should be surveyed in order based on the date shown at the bottom of the authorization sheet. Every effort should be made to survey and return these jobs promptly so that the required editing and final drafting can be completed before the due date.

4. Inverse Suit. The date near the bottom of the authorization sheet is the date when the final map is required to be in the hands of the Attorney General's Office Trial Attorney. Every effort should be made to survey and return these jobs promptly so that the required editing and final drafting can be completed before said date.

5. Eleven month jobs.

Completing the Job

After the survey and map are completed, the map and notes of the survey should be checked against the survey checklists for complete coverage of all items called for on the list.

When every item is found to be in order, all of the field notes, copies of deed descriptions, copies of plats, and all other information regarding the survey, including the survey check lists, should be bound on the left hand side of the manila folder.

The electronic file is to be transmitted and file folder mailed to Central office when the survey is completed and checked. Electronic files should be named by the PSD# followed by an f (for field) with an extension of .psd. (example. 70198lf.psd). Revised electronic files should be named by the PSD# followed by an f followed by an r with an extension of psd. (example 70198lfr.psd). See Walter's naming convention sheet.

Preliminary vs. Final Maps

The map that you prepare in the field office, or have prepared by a private engineering firm, under your supervision, is called the "preliminary map". The preliminary map will be used by the Property Survey Section to prepare a "final map". The final map is a court exhibit used by the Attorney General's Office attorney to present DOT's case. The "final map" may differ significantly from your preliminary map. The attorney will often request that a preliminary map be simplified as much as possible in order that a jury can understand it. Often information that would be quite valuable to a surveyor but would only serve to confuse a juror is removed. Your preliminary map is the map you will have to support if you are called to testify in court. This map should accurately portray all of the evidence that you gathered in the field to help you make decisions concerning the boundary and areas of taking. Useful information that you don't want to appear on the face of the map can be placed on any unused level.